



Remedial Action at Installation Restoration Site 24 Former Naval Station Treasure Island



Fact Sheet

September 2017

INTRODUCTION

The Navy is in the final stages of environmental cleanup at Site 24 on the Former Naval Station Treasure Island (Figure 1). Hazardous chemicals were released to the environment during the historical operations of a dry cleaning facility at Site 24. This fact sheet describes the remedial action conducted to reduce the concentration of volatile organic compounds (VOCs) present in groundwater and soil gas across the site.

SITE HISTORY

Site 24 is located along the eastern edge of Treasure Island and includes Building 99, which was used as a dry cleaning facility from 1942 through 1977. Dry cleaning facilities typically used dry cleaning fluids that, when spilled or disposed of improperly, contaminate soil and groundwater. An investigation of Site 24 found that the site posed a potential risk to human health and the environment. VOCs, specifically tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC), were present in soil, groundwater, and soil gas at and near the dry cleaning facility inside Building 99. PCE is a commonly used dry cleaning fluid. Over time, natural bacteria in the soil break down PCE in the environment, producing TCE, DCE, and VC. These chemicals are sometimes collectively referred to as chlorinated ethenes.

In 2002, chlorinated ethenes were found in groundwater extending from Building 99 to the San Francisco Bay. The Navy conducted a treatability study at Site 24 from 2003 through 2012, which involved injecting a type of dechlorinating bacteria and nutrient sources (such as vegetable oil) for microorganisms into the groundwater. This additive allows the dechlorinating bacteria to grow, breaking down chlorinated ethenes to nontoxic ethene in the process. This is a common practice for treating groundwater, referred to as in situ bioremediation (ISB). The study showed that the contaminants could be broken down to nontoxic compounds.

After completion of the study, the extent of chlorinated ethenes was reduced significantly; however, chlorinated ethenes remained in the groundwater, soil, and soil gas. The Navy presented a Proposed Plan during a March 2015 public meeting to complete the cleanup at Site 24.

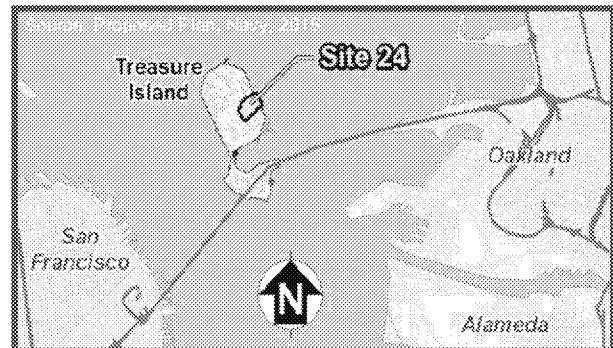


Figure 1: Former Naval Station Treasure Island and Site 24 Location

PROJECT CONTACTS

If you have any questions or concerns about environmental activities at Site 24, please feel free to contact any of the project representatives:

Navy Contact

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Water Board Contact

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The Navy received public comment on the proposed cleanup action during the meeting and a 30-day comment period. Regulatory agencies including the U.S.

Environmental Protection Agency (USEPA), California Department of Toxic Substances Control (DTSC), and San Francisco Bay Regional Water Quality Control Board (Water Board) concurred with the Navy's selected remedy presented in the Record of Decision, which was finalized in December 2015.

COMPLETED WORK

The cleanup action consisted of excavation of soil, groundwater treatment, and groundwater and soil gas monitoring. Figure 2 shows a conceptual view of the remedy, and Figure 3 shows a detailed plan view of work completed. Before implementing the cleanup, a pre-design site characterization study was conducted at Site 24 from August to October 2016 to collect soil and groundwater data to define the limits of excavation and groundwater treatment of three remaining plumes of contamination.

Between October 2016 and January 2017, the Navy dug up and removed soil at Site 24 to remove chemical contamination (see Figure 3). The excavation inside Building 99 was 4.5 feet below the ground surface, and the excavation outside Building 99 was 7 feet below the ground surface. Remediation verification samples were collected from the sidewalls of the excavation to confirm

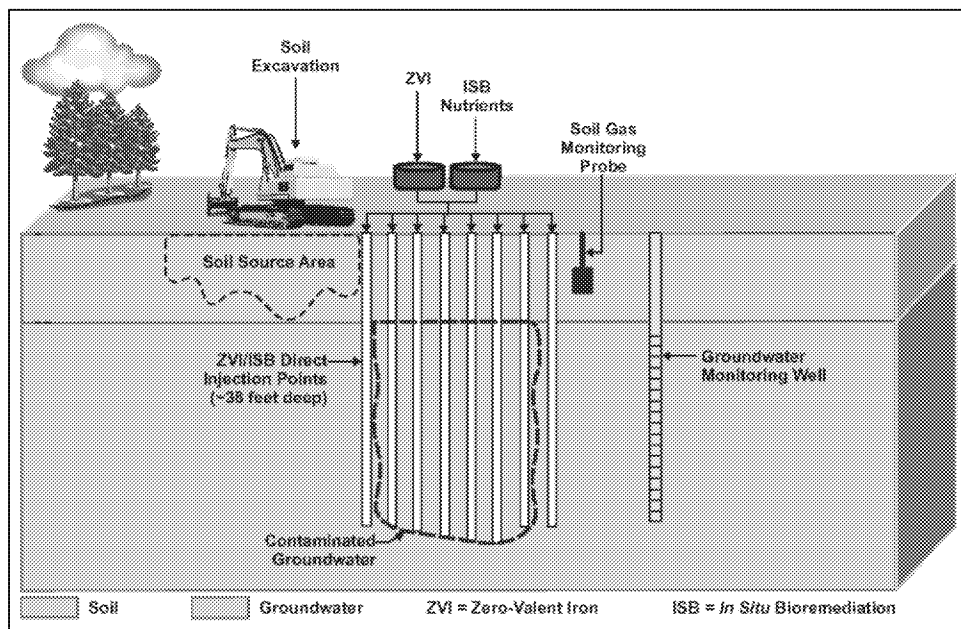
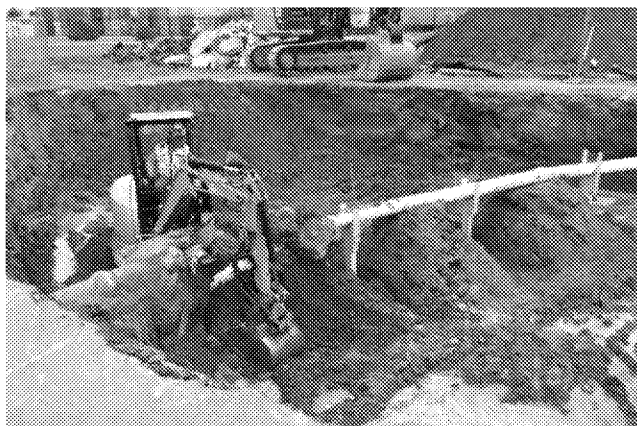


Figure 2: Conceptual Diagram of Excavation, ZVI/ISB Groundwater Treatment, and Monitoring

that all contaminated soil was removed. Workers removed about 1,200 cubic yards of soil (about 92 truckloads) and disposed of this soil at a certified landfill in Livermore, CA. The Navy has restored Site 24 to pre-investigation conditions by backfilling the excavated areas with clean soil and gravel and repaving the area outside of Building 99.

Between December 2016 and February 2017, the Navy performed groundwater treatment with a combination of in situ chemical reduction by a zero-valent iron (ZVI) product and enhanced bioremediation by nutrient injections. About 74,000 pounds of ZVI and about 43,000 pounds of nutrients were injected into groundwater through 182 injection points (see Figure 3), stimulating chemical reactions and biological activity that degrade chlorinated ethenes to non-toxic products.



Excavation of Contaminated Soil Outside Building 99

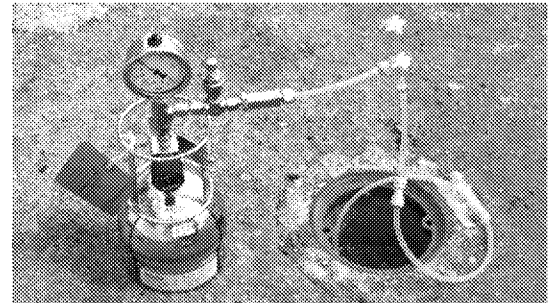


Groundwater Treatment Injection Equipment

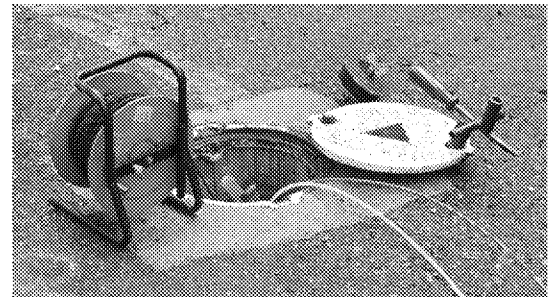
In March 2017 and June 2017, the Navy completed groundwater and soil gas monitoring to determine if the groundwater treatment was effective. Although VOCs are still present above cleanup levels, the results showed that the groundwater treatment has created conditions necessary for chlorinated ethenes to degrade to non-toxic products. In some areas, contaminants are no longer detectable, while other sampling results indicate a downward trend in contaminant concentrations. The remedial action is working as expected and designed.

NEXT STEPS

Groundwater and soil gas monitoring will be conducted every three months for a minimum of two years to verify that the groundwater treatment process is successful and to determine when cleanup goals are met. If after one year of monitoring the cleanup goals have not been achieved, an additional groundwater treatment injection event may be performed. If cleanup goals are not met prior to redevelopment of the property, institutional controls will be implemented to restrict the property use. Most of Site 24 is planned for redevelopment as open space (planned future residential areas are shown on Figure 3).



Soil Gas Sampling Equipment



Groundwater Sampling Equipment

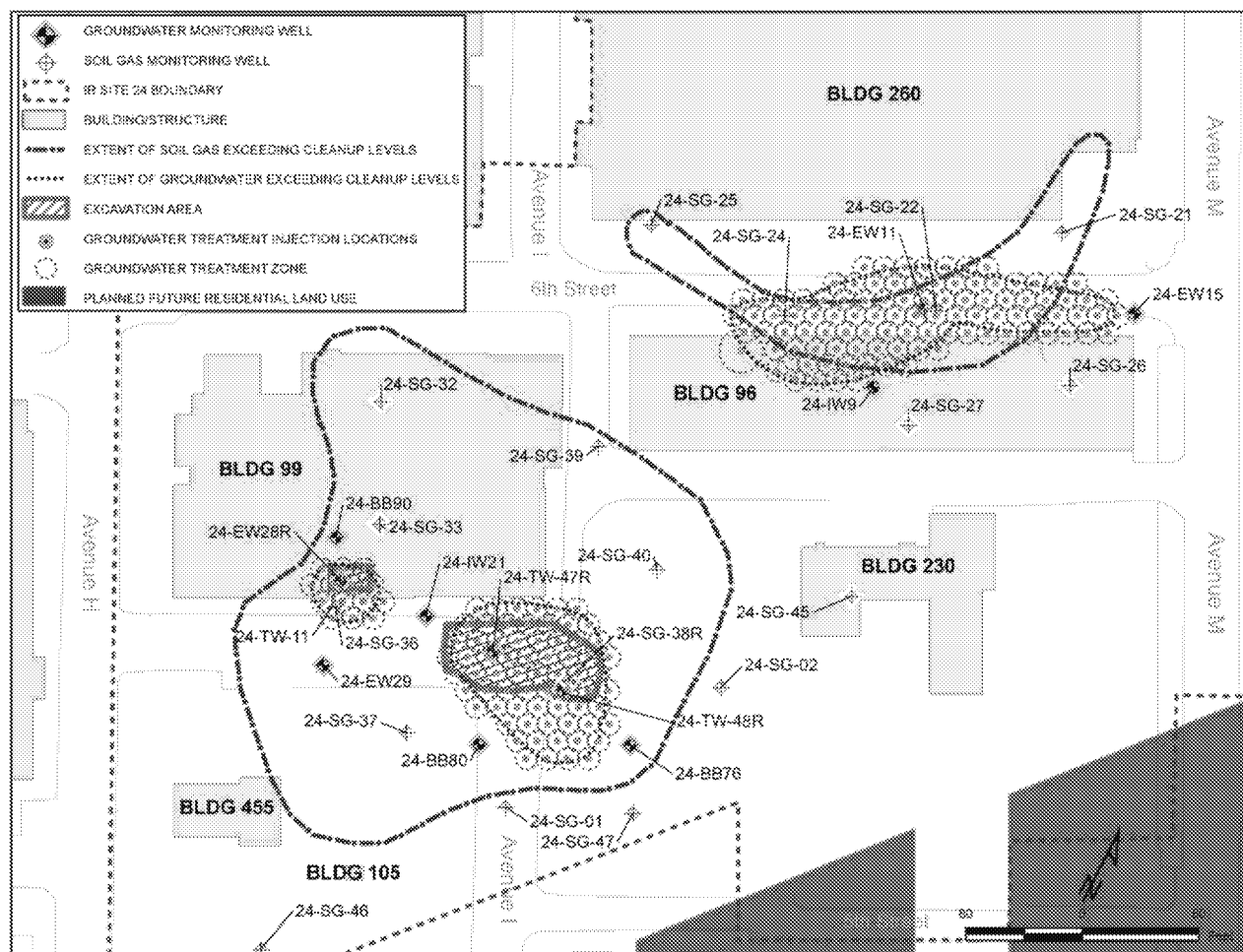


Figure 3: Plan View of Excavation, Groundwater Treatment, and Monitoring Locations



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FOR MORE INFORMATION

Documents that detail activities associated with this remedial action, including the Record of Decision and Remedial Design and Remedial Action Work Plan, are available at the following locations:

San Francisco Public Library
Government Publications Section
100 Larkin Street, 5th Floor
San Francisco, California 94102
Call for hours: (415) 557-4400

Navy BRAC Caretaker Support Office
1 Avenue of the Palms, Suite 161
Treasure Island
San Francisco, California 94130
Call for hours: (415) 743-4729

Navy BRAC Caretaker Support Office
1 Avenue of the Palms, Suite 161
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